

# WHO and Environmental Health

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"More than three-fourths of the world's population drink unsafe water, dispose of their human wastes recklessly, prepare their milk and food dangerously, and are plagued by insects and rodents." An even more startling statement on the magnitude of the problem of faulty environment is that of the Director-General of the World Health Organization, "one-fifth of all the deaths in the world are due to faulty environment" (1). Yet quoting Dr. H. Van Zile Hyde, "The major health problem of the world today is not death—it is chronic and repeated infections and infestations which convert man from a productive unit of society to a liability to society" (2). It is small wonder, then, that the World Health Organization is devoting more and more attention to problems of environmental health. The WHO proposed program and budget estimates for the year 1952 state:

The ravages of water-borne, insect-carried and excreta-transmitted diseases outweigh in economic and public health importance those of almost any other group of diseases. Their control is based on universally accepted principles of sanitation and hygiene. Their origins are nondebatable; their epidemiology has long been known; the costs of correction, although significant, are often not insuperable if ingenuity and imagination are applied. With the limited funds at

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its disposal WHO will continue to assist member states in improving environmental sanitation, for it is evident that this is work which will yield very large returns.

Many observers at the Fourth World Health Assembly, which met in Geneva in May 1951, commented on the increasing interest in environmental sanitation shown by the delegations from nearly all member states. Illustrative of this spirit was the resolution introduced by the Indian delegation and unanimously adopted by the Assembly. It urged member states to employ more sanitation personnel and recommended that WHO help in the creation of training facilities for such personnel. Col. M. Jafar, the principal delegate for Pakistan, and chairman of the program committee of the Fourth World Health Assembly, said that the committee was of the opinion that the best way of proving the importance of preventive medicine was to choose projects which give demonstrable results and that environmental sanitation projects were particularly suitable from this standpoint. It is also significant that the theme of the 1952 World Health Day was "Healthful surroundings make healthy people."

## Organization of Sanitation Services

In the Secretariat of the World Health Organization the division of environmental sanitation on January 1, 1952, was charged with responsibility in the following fields:

1. Municipal sanitation, including water supplies, sewage and waste treatment, garbage and waste disposal.
2. Rural sanitation, including water supplies, sewage and excreta disposal, sanitation of isolated dwellings.
3. Housing and town planning.

4. Insect, rodent, and other vector control (acting as a service unit to the medical divisions and sections having responsibilities in this field).

5. Milk and food sanitation.

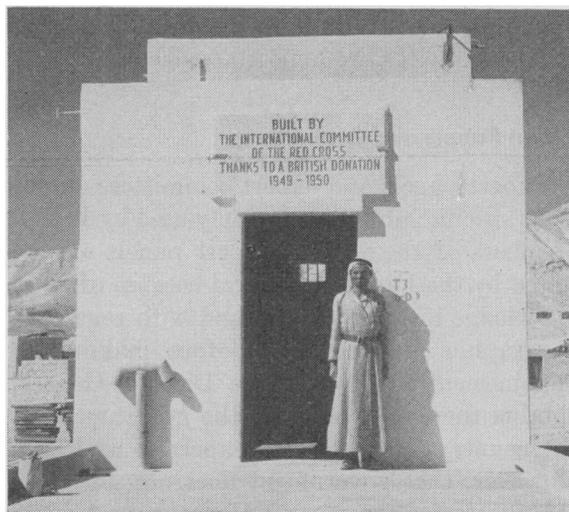
6. Environmental phases of occupational health.

7. Advice to the division of education and training on matters pertaining to environmental sanitation personnel.

The director of this division participates with the directors of the other eight technical and three administrative divisions in the Secretariat on over-all planning and coordination. Not all of the environmental health activities of WHO are conducted by this division. For instance, the work in malaria control, which has been an outstanding example of effective preventive medicine, is a responsibility of the malaria section, a component of the division of communicable diseases. There is, however, in the WHO Secretariat a general desire to eliminate water-tight compartments, and there has been close cooperation between the personnel assigned to the malaria section and those in the environmental sanitation unit.

Operational responsibility for environmental sanitation activities is vested in six regional offices serving: Africa, the Americas (the Pan American Sanitary Bureau serves as the regional office for the Americas), Southeast Asia, Europe, Eastern Mediterranean, and the Western Pacific.

The staff of each of these regional offices includes an adviser on environmental sanitation who is a sanitary engineer with public health experience and training. Usually, there is also a regional adviser on malaria. WHO demonstration teams, consultants, and personnel conducting other activities in individual member states are under the supervision of the appropriate regional office. WHO does not have legal authority over any member states—it operates only at the request of the nation affected. In appropriate fields work is done cooperatively with the other specialized agencies of the United Nations such as the Food and Agriculture Organization, the United Nations Educational, Scientific, and Cultural Organization, the International Labor Organization, and the United Nations International Children's Emergency Fund. Every attempt is also made to utilize the resources of the United Nation's



Water treatment plant at AKABA Refugee Camp near Jericho (Hashemite Kingdom of Jordan). Operator is an Arab refugee. The T 3 GD8 on the building indicates that it has received a DDT, ganexane residual spray.

program for technical assistance for economic development of underdeveloped countries.

### Methods of Operation

The very small budget, considering the number of activities attempted, allows WHO to assign only a limited number of personnel to environmental sanitation work. On December 1, 1951, less than 75 persons, including physicians, entomologists, public health engineers, and sanitarians, were assigned to such activities. Ten of these were on teams assigned to relief operations among the civilians of Korea. It is therefore apparent that WHO cannot make a significant impression on sanitation problems by attempting to intensify and augment the work of existing national agencies. To have an appreciable effect, WHO has directed its efforts principally toward such activities as:

1. Collection and exchange of scientific and technical knowledge by expert committees, expert panels, and scientific conferences.
2. Training of national personnel by assignment of demonstration teams.
3. Training either by traveling fellowships or by enrollment in formal academic courses.
4. Strengthening of training facilities.
5. Short-term expert consultation on specific problems.

The results obtained by these methods when compared with the expenditures have been ex-

ceedingly good. Most of the work has been sound and will have long-time effects.

### **Expert Panels and Committees**

Expert panels and expert committees on various specific subjects are widely used by WHO. Members of the various expert panels are selected by the Director-General because of their knowledge in specific fields and with regard to geographic distribution. Before making an appointment to a panel, the Director-General obtains the concurrence of the government of the country of which the expert is a citizen. However, that government does not nominate candidates for the panel. Hence, expert panel members do not officially represent their countries. The members of these panels are expected to keep the Secretariat of WHO advised of current developments in their specific fields and areas. They also receive information furnished by other members of the panel.

From the expert panels, the Director-General from time to time constitutes expert committees which are convened to advise WHO on the technical aspects of its activities. The reports of the committees are published in a WHO Technical Report Series and are available at very low costs from agents in most countries. To persons interested in environmental sanitation, the reports of the Expert Committees on Environmental Sanitation, Malaria, Insecticides, and Cholera are particularly valuable. These reports represent the consensus of well-recognized experts. The reports of the committees are transmitted by WHO to all of its member states. The Executive Board of WHO may comment on the reports but it does not amend them.

### **Conferences and Seminars**

Another device for exchanging scientific information has been the use of conferences and seminars. In Europe two conferences on sanitary engineering have been held. The first in 1950 at The Hague was conducted under the auspices of the Government of the Netherlands, WHO, and the Rockefeller Foundation. Representatives from 14 European nations were present. The primary objectives of the con-

ference were: (a) to disseminate knowledge of the status and needs of sanitary engineering in the various countries; (b) to stimulate and coordinate European research in environmental sanitation; (c) to bring about closer relationships between sanitary engineers in the countries of Europe.

The conference was highly successful from the standpoints of exchange of information and of focusing attention on the need for coordination of research. There is no doubt that the third objective was also accomplished. The Rockefeller Foundation, the Government of Italy, and WHO conducted a similar conference in Rome in November 1951. In addition to engineers, a number of physicians from national health departments attended. From the conference the public health administrators learned more about the contributions the engineer can make to the public health team.

Another outstanding conference sponsored by WHO (in conjunction with the Commission for Technical Cooperation in Africa South of the Sahara) was the Malaria Conference held in Kampala, Uganda, in November and December 1950. This conference, participated in by well-known experts, considered all available information and made specific recommendations for malaria control work.

### **Demonstration Teams**

Teams of specialists sent to individual countries have been used by WHO to train personnel in that country in new techniques. In the environmental sanitation field most of these specialist teams have been concerned with malaria control. Teams for mosquito and other insect control have functioned in four different areas in India, and in Pakistan, Thailand, Afghanistan, and Cambodia. Iran and six countries of Central America have also been assisted in insect control work. Frequently such teams must first obtain information on the mosquito vectors in the area and then must develop economical methods of control. The work done by these malaria control teams has been highly beneficial. There is no doubt that they are truly demonstration teams. Dr. Leonard A. Scheele, president of the Fourth World Health Assembly, in his presidential address, made the

statement that the WHO malaria control teams had protected directly only 1½ millions of people but that the demonstrations of these teams had resulted in programs which are protecting 50 million people. These malaria control teams have included in their personnel either public health engineers or sanitarians. These sanitation personnel have done much general sanitation work in addition to malaria control. Several countries, including Pakistan and Afghanistan, strongly requested the continuation of general sanitation activities after the malaria control teams finished their assignments.

A contemplated type of WHO specialist team activity is the use of cholera control teams, each of which will have a public health engineer as an important member. The WHO Expert Committee on Cholera, meeting in New Delhi in November 1951, recommended that sanitation measures be one of the principal methods of attacking cholera. The arguments for this were skillfully put forth in a paper prepared by K. Subrahmanyam (3), professor of sanitary engineering at the All-India Institute of Hygiene and Public Health. One pertinent portion of his paper follows:

The fact that we know about cholera is that it can be transmitted from person to person through drinking water or food contaminated with the organisms. This is sufficient to justify a demand for uncontaminated water and food, and an environment in which there will be few flies and no excreta exposed or accessible to flies. The demand is for environmental sanitation, and when that is granted it should reduce the chances of spread of the disease, reasoning on the facts we know. Environmental sanitation appears to be a necessary condition for eradication of cholera.

A type of demonstration team which is coming more and more into use in WHO is the general public health team. These teams always include a public health engineer or a sanitarian. This fits into the concept that to develop public health protection in most countries there is a need for a program that includes all the basic services, of which one certainly is environmental sanitation.

### Training Personnel

Specialists and experts from other countries can be, and are, a great help to an underdeveloped country in starting a program. However,



Arab refugee in the Hashemite Kingdom of Jordan performing orthotolidine test for residual chlorine. He was trained by a WHO engineer.

to make a sound environmental sanitation program stick, the leaders of the program must be nationals of the country and must have the specialized training necessary to carry on the program. The sanitation personnel in these countries must be at several levels of competence. The second meeting of the WHO Expert Committee on Environmental Sanitation devoted its entire time to the questions of the education, training, and utilization of sanitation personnel. The following statement in the committee's report is relevant to the use of high-level personnel in underdeveloped countries:

The assumption, perhaps too widely made, that underdeveloped regions are not prepared for the services of the best trained specialists in environmental sanitation can readily be contested. Countries of minimum resources are most in need of the highest expert service available, both for diagnosis of need and for programing of solutions. The relegation of these functions to less adequately prepared persons results from a great misunderstanding of the complexity of the problems in environmental sanitation normally encountered in areas of low economic level. These

problems require for their solution the impact of high intelligence, training, and experience, even when the number of persons possessing such qualifications is necessarily a minimum. It is unsound practice literally to send a boy to do a man's job.

### **WHO Fellowships**

To assist in training top sanitation personnel both in governmental work and in teaching positions, WHO grants fellowships which finance the cost of the training of individuals selected by their government in consultations with WHO officials. Some training fellowships are used at established educational institutions. In other cases the grant is for a traveling fellowship which the fellow uses to visit and to make observations on installations, governmental units, institutions, and other places or programs of particular interest to him. Ordinarily these traveling fellowships are reserved for persons who have had sufficient experience to allow them to evaluate their observations and to adapt them to their own conditions. A number of United States citizens have received such fellowships—a typical one was granted the sanitary engineer of the Alaska Health Department to allow him to study cold weather sanitation practices in the northern Scandinavian countries. Another grant allowed the chief sanitary engineer of the Ministry of Health of Israel to observe sanitation practices in the Americas.

Fellowships for formal study at educational institutions are widely used. The purpose of the fellowships, of course, is to train key people who will be able to develop and improve programs in their own countries. For instance, a fellowship was granted in 1950 to an engineer from the Hashemite Kingdom of Jordan for studying sanitary and public health engineering at the Imperial College of Science and Technology (London) and the London School of Hygiene and Tropical Medicine. This engineer is now in the governmental service in his country and is the first sanitary engineer to be so employed. Only in exceptional cases are fellowships for formal education granted to undergraduates—WHO feels that the candidate should have had his basic training before he receives financial assistance. One exception to this rule was the granting of a fellowship to an undergraduate engineer from Liberia. In that

country only one national has an engineering degree, and there is no university or school offering engineering education. It was the belief of WHO officials that one of the basic needs was for a sanitary engineer in the Health and Sanitation Department of the Republic and that the fastest method of fulfilling this need was to assist in the training of a suitable candidate at the undergraduate level.

In many of the underdeveloped countries, there is a great need for the training of intermediate and low-level sanitation personnel. Obviously, such training must be given locally. Within the limitations of its budget, WHO attempts to assist in such training. In the African region a sanitarian, experienced in tropical sanitation, devotes much of his time to this type of activity. In Afghanistan, the WHO sanitary engineer spends a large portion of his time in such training work.

### **Strengthening of Training Facilities**

The prevailing feeling in WHO is that, in general, sanitary engineers and other sanitation personnel profit more if their first formal specialized training is received in a locality where the climatic, economic, and cultural patterns are similar to those in their own country. If this is to be done, strengthening of training facilities in the underdeveloped countries is essential. Unfortunately, WHO's budgetary provisions for such action are limited. However, some assistance has been given toward the strengthening of sanitary engineering work at the All-India Institute of Hygiene and Public Health by a grant for the purchase of equipment, and a current project provides for a professor of sanitary engineering for Thailand.

### **Short-Time Consultants**

WHO furnishes a considerable amount of assistance to its member states by the use of short-time consultants. Such consultantships in specific problems frequently make it possible to obtain experts who would not be available for long-time employment. These services are requested at times by the highly developed countries as well as by countries which have not progressed so far economically. For instance,

consultants have not only gone from the United States, but the program also operated in reverse when an expert on garbage and refuse disposal from the United Kingdom gave assistance to Federal, State, and local health authorities in the United States.

### Services for Special Groups

Earlier in this discussion it was implied that WHO does not conduct routine operational programs. There is an exception to this rule since the constitution of WHO states that WHO shall "provide or assist in providing, upon the request of the United Nations, health services and facilities to special groups." Two large special groups, the civilian population of Korea and the Arab Palestine refugees, have been furnished health services.

In Korea, WHO was asked in 1950 to furnish personnel, including 10 sanitation specialists, to serve under the unified command. Five sanitarians and 5 sanitary engineers were recruited to bring emergency health services to the hordes of civilians whose lives were disrupted by the war. Their work was concentrated on matters of basic sanitation and insect control. On January 1, 1952, all health and sanitation work of the United Nations was taken over by the United Nations Korean Reconstruction Agency and these personnel were given the option of transferring to the new agency.

In the Near East, WHO had also assisted in carrying on a health program among the Arab Palestine refugees. These refugees now live in areas of Lebanon, Syria, Hashemite Kingdom of Jordan, and the Gaza area. The over-all United Nations responsibility is vested in the United Nations Relief and Works Agency for Palestine Refugees in the Near East.

The health and sanitation staffs were partially recruited by WHO, and the work is headed by a public health physician employed by WHO. Two of his principal staff members are also WHO employees—a physician-malariologist and a sanitary engineer. The environmental sanitation work among these refugees has been of prime importance since more than half of the 800,000 refugees are living in crude hut and tent camps in a highly malarious region. In many cases there was a problem not only of providing satisfactory sanitary facilities but also of educating the inhabitants of the camps in proper methods of use. A problem of great magnitude is that of fly control since flies in that area are not only implicated in the transmission of gastrointestinal diseases but are also the cause of many of the ophthalmic conditions observed in children. The fly problem certainly has not been solved, but it has been reduced.

### Conclusion

Because of limitation of funds WHO has made only a meager beginning on many of the sanitation problems of the world. However, its environmental control work has been sound. With a more adequate budget WHO could accelerate the progress which its individual member states are making in producing a satisfactory physical environment.

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